

CLAIMS:

1. A method comprising:

estimating an initial gamma for a display device based on selection of a
5 displayed green element that appears to most closely blend with a dithered green
background;

characterizing overall gamma for red, blue, and green channels of the display
device based on the estimated gamma; and

10 modifying the overall gamma based on a gray balance evaluation for the red and
blue color channels.

2. The method of claim 1, the method further comprising:

modifying a color image based at least in part on the estimated gamma; and
delivering the modified color image to the display device.

3. The method of claim 1, wherein the display device is associated with a
client residing on a computer network, the method further comprising:

transmitting information representing the estimated gamma to a remote server
on the network;

20 modifying the color image at the remote server based on the information; and
delivering the modified color image to the client via the computer network for
display on the display device.

4. The method of claim 1, wherein estimating the gamma includes:

25 selecting one of a first plurality of green elements displayed by the display
device that appears to most closely blend with the dithered green background;

estimating a coarse gamma for the display device based on the selected one of
the first plurality of green elements;

30 selecting one of a second plurality of green elements displayed by the display
device that appears to most closely blend with the dithered green background, wherein

the second plurality of green elements includes the selected one of the first plurality of green elements; and

estimating a fine gamma for the display device based on the selected one of the second plurality of green elements, wherein the estimated fine gamma is the estimated gamma.

5 5. The method of claim 4, wherein the first plurality of green elements represent greater gradations in green intensity than the second plurality of green elements.

10 6. The method of claim 1, further comprising:
selecting one of the selected green element and a plurality of red-blue shifted elements displayed by the display device that appears to most closely blend with the dithered green background displayed by the display device; and

15 estimating the gray balance of the display device based on the selected one of the selected green element or selected red-blue shifted element.

20 7. The method of claim 6, wherein the red-blue shifted elements represent shifts in red, blue, or a combination of red and blue away from the color value of the selected green element.

25 8. The method of claim 6, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

 9. The method of claim 1, wherein the estimated gamma is limited to the green channel.

30 10. The method of claim 1, further comprising:
estimating both the blackpoint and the gray balance of the display device; and

characterizing the colorimetric response of the display device based on the estimated gamma, blackpoint, and gray balance.

11. The method of claim 10, wherein the display device is associated with a client residing on a computer network, the method further comprising:

transmitting information representing the estimated blackpoint, gamma, and gray balance to a remote server on the network;

modifying the color image at the remote server based on the information; and delivering the modified color image to the client via the computer network for display on the display device.

12. The method of claim 10, further comprising:

modifying a color image based on the estimated blackpoint, gamma, and gray balance; and

delivering the modified color image to the display device.

13. The method of claim 1, wherein the dithered green background is a dithered approximately 33% green background.

14. The method of claim 1, wherein the display device is associated with a client on a computer network, the method further comprising guiding the client through the process of obtaining the estimated gamma by delivering one or more instructional web pages to the client.

15. A system comprising:
a web server to transmit web pages to clients residing on a computer network;
a color image server to transmit color images referenced by the web pages to the clients for display on display devices associated with the clients;

a color profile server to guide the clients through a color profiling process and obtain information characterizing the color responses of the display devices associated with the clients, wherein the information includes an initial gamma for the display

device, the initial gamma being determined based on selection of a displayed green element that appears to most closely blend with a dithered green background, and an overall gamma for red, blue, and green channels of the display device determined from on modification of the initial gamma based on a gray balance evaluation for the red and blue color channels; and

one or more color correction modules to modify the color images transmitted by the color image server based on the information to improve the accuracy of the color images when displayed on the respective display device.

16. The system of claim 15, wherein the color image server stores the information to the client in a web cookie, the client transmits the web cookie from the client to the server, and the color image server modifies the color image via the server based on the contents of the web cookie.

17. The system of claim 15, wherein the color profiling process includes: estimating the gray balance of the display device by selecting one of the selected green elements and a plurality of red-blue shifted elements displayed by the display device that most closely blends with the dithered gray background displayed by the display device;

generating a color profile for the display device based on the estimated gamma, and the estimated gray balance; and

modifying the color image for the display device using the color profile.

18. The system of claim 17, wherein the color profiling process includes: selecting one of the selected green element and a plurality of red-blue shifted elements displayed by the display device that appears to most closely blend with the dithered green background displayed by the display device; and

estimating the gray balance of the display device based on the selected one of the selected green element or selected red-blue shifted element.

19. The system of claim 18, wherein the red-blue shifted elements represent shifts in red, blue, or a combination of red and blue away from the color value of the selected green element.

5 20. The method of claim 18, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

10 21. The system of claim 15, wherein estimating the gamma includes:
selecting one of a first plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background;
estimating a coarse gamma for the display device based on the selected one of the first plurality of green elements;
15 selecting one of a second plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background, wherein the second plurality of green elements includes the selected one of the first plurality of green elements; and
estimating a fine gamma for the display device based on the selected one of the second plurality of green elements, wherein the estimated fine gamma is the estimated gamma.
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22. The system of claim 21, wherein the first plurality of green elements represent greater gradations in green intensity than the second plurality of green elements.
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23. The system of claim 15, wherein the estimated gamma is limited to the green channel.

30 24. The system of claim 15, wherein the color profiling process includes:
estimating both the blackpoint and the gray balance of the display device; and

characterizing the colorimetric response of the display device based on the estimated gamma, blackpoint, and gray balance.

5 25. The system of claim 15, wherein the dithered green background is a dithered approximately 33% green background.

 26. A computer-readable medium containing instructions to cause a programmable processor to:

10 estimate a gamma for the display device based on selection of a displayed green element that appears to most closely blend with a dithered green background; and

 characterize overall gamma for red, blue, and green channels of the display device based on the estimated gamma; and

15 modify the overall gamma based on a gray balance evaluation for the red and blue color channels.

 27. The computer-readable medium of claim 26, wherein the instructions cause the processor to:

 modify a color image based at least in part on the estimated gamma; and

20 deliver the modified color image to the display device.

 28. The computer-readable medium of claim 26, wherein the display device is associated with a client residing on a computer network, and the instructions cause the processor to:

25 transmit information representing the estimated gamma to a remote server on the network;

 modify the color image at the remote server based on the information; and

 deliver the modified color image to the client via the computer network for display on the display device.

29. The computer-readable medium of claim 26, wherein estimating the gamma includes:

selecting one of a first plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background;

estimating a coarse gamma for the display device based on the selected one of the first plurality of green elements;

selecting one of a second plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background, wherein the second plurality of green elements includes the selected one of the first plurality of green elements; and

estimating a fine gamma for the display device based on the selected one of the second plurality of green elements, wherein the estimated fine gamma is the estimated gamma.

30. The computer-readable medium of claim 29, wherein the first plurality of green elements represent greater gradations in green intensity than the second plurality of green elements.

31. The computer-readable medium of claim 26, wherein the instructions cause the processor to:

select one of the selected green element and a plurality of red-blue shifted elements displayed by the display device that appears to most closely blend with the dithered green background displayed by the display device; and

estimate the gray balance of the display device based on the selected one of the selected green element or selected red-blue shifted element.

32. The computer-readable medium of claim 31, wherein the red-blue shifted elements represent shifts in red, blue, or a combination of red and blue away from the color value of the selected green element.

33. The computer-readable medium of claim 31, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

5 34. The computer-readable medium of claim 26, wherein the estimated gamma is limited to the green channel.

35. The computer-readable medium of claim 26, wherein the instructions cause the processor to:

10 estimate both the blackpoint and the gray balance of the display device; and
characterize the colorimetric response of the display device based on the estimated gamma, blackpoint, and gray balance.

15 36. The computer-readable medium of claim 35, wherein the display device is associated with a client residing on a computer network, and the instructions cause the processor to:

20 transmit information representing the estimated blackpoint, gamma, and gray balance to a remote server on the network;
modify the color image at the remote server based on the information; and
deliver the modified color image to the client via the computer network for display on the display device.

37. The computer-readable medium of claim 26, wherein the instructions cause the processor to:

25 modify a color image based on the estimated blackpoint, gamma, and gray balance; and
deliver the modified color image to the display device.

30 38. The computer-readable medium of claim 26, wherein the dithered green background is a dithered approximately 33% green background.

39. The computer-readable medium of claim 26, wherein the display device is associated with a client on a computer network, and the instructions cause the processor to guide the client through the process of obtaining the estimated gamma by delivering one or more instructional web pages to the client.

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40. The computer-readable medium of claim 26, wherein the instructions are contained both in physical data storage media and signals transmitted between the client and other resources on the computer network.

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